Lower Colorado River Multi-Species Conservation Program

Balancing Resource Use and Conservation

Imperial Ponds Conservation Area

2013 Annual Report

U.S. DEPARTMENT OF THE INTERIOR
BUREAU OF RECLAMATION

January 2018

Work conducted under LCR MSCP Work Task E14

Lower Colorado River Multi-Species Conservation Program Steering Committee Members

Federal Participant Group

Bureau of Reclamation
U.S. Fish and Wildlife Service
National Park Service
Bureau of Land Management
Bureau of Indian Affairs
Western Area Power Administration

Arizona Participant Group

Arizona Department of Water Resources
Arizona Electric Power Cooperative, Inc.
Arizona Game and Fish Department
Arizona Power Authority
Central Arizona Water Conservation District
Cibola Valley Irrigation and Drainage District
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City of Lake Havasu City
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Mohave Water Conservation District
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Unit "B" Irrigation and Drainage District
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Yuma Irrigation District
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Other Interested Parties Participant Group

QuadState Local Governments Authority
Desert Wildlife Unlimited

California Participant Group

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Coachella Valley Water District
Colorado River Board of California
Bard Water District
Imperial Irrigation District
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Palo Verde Irrigation District
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Hualapai Tribe
Colorado River Indian Tribes
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Conservation Participant Group

Ducks Unlimited
Lower Colorado River RC&D Area, Inc.
The Nature Conservancy

Lower Colorado River
Multi-Species Conservation Program

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January 2018

Finnegan, A., C. Dodge, and S. Kokos. 2018. Imperial Ponds Conservation Area, 2013 Annual Report. Lower Colorado River Multi-Species Conservation Program, Bureau of Reclamation, Boulder City, Nevada.

ACRONYMS AND ABBREVIATIONS

BLRA	California black rail (*Laterallus jamaicensis coturniculus*)
CLRA	Yuma clapper rail (*Rallus longirostris yumanensis* [also known as Yuma Ridgway's rail = *R. obsoletus yumanensis*])
DO	dissolved oxygen
FY	fiscal year
Imperial NWR	Imperial National Wildlife Refuge
IPCA	Imperial Ponds Conservation Area
LCR MSCP	Lower Colorado River Multi-Species Conservation Program
LEBI	western least bittern (*Ixobrychus exilis hesperis*)
pH	potential of hydrogen
PIT	passive integrated transponder
RASU	razorback sucker (*Xyrauchen texanus*)
Reclamation	Bureau of Reclamation
SpCond	specific conductivity
USFWS	U.S. Fish and Wildlife Service

Symbols

>	greater than
<	less than

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1.0 INTRODUCTION

The purpose of this annual report is to summarize all activities, including planning, design, construction, restoration, monitoring, and adaptive management that have occurred at the Imperial Ponds Conservation Area (IPCA) from October 1, 2012, through September 30, 2013, Federal fiscal year (FY) 2013. However, water usage is presented as a calendar year, January 1through December 31, 2013, consistent with reporting for water accounting.

1.1 Background

The IPCA consists of 132 acres of land located on the U.S. Fish and Wildlife Service's (USFWS) Imperial National Wildlife Refuge (Imperial NWR). In 2000, the USFWS, the Bureau of Reclamation (Reclamation), and Ducks Unlimited began constructing the DU2 Ponds as part of the 1997 Biological Opinion. The site consisted of 96 acres that included four backwater ponds and native riparian forest. Problems developed with both the backwater and riparian habitat (Reclamation 2005). The backwater ponds were shallow and could not be isolated from one another without compromising water quality. One backwater pond successfully maintained native fishes; however, fishes could not be maintained in the remaining three backwater ponds. The riparian plantings of Fremont cottonwood-willow (*Populus fremontii-Salix* sp.) were unsuccessful as a result of high soil salinities.

Reclamation once more partnered with the USFWS to fulfill a portion of the Lower Colorado River Multi-Species Conservation Program's (LCR MSCP) habitat creation/restoration goals. A Land Use Agreement has been entered into between Reclamation and USFWS that identifies 132 acres of program lands that comprise the IPCA and secures water on the refuge.

2.0 CONSERVATION AREA INFORMATION

2.1 Purpose

The IPCA was developed for both native fishes and terrestrial wildlife species. Currently, the IPCA consists of six disconnected backwaters totaling 80 acres created as backwater habitat for razorback suckers (*Xyrauchen texanus*), and bonytail (*Gila elegans*). There are 12 acres of managed marsh for California black rails (*Laterallus jamaicensis coturniculus*), Yuma clapper rails (*Rallus longirostris yumanensis* [also known as Yuma Ridgway's rail = *R. obsoletus yumanensis*]), and western least bitterns (*Ixobrychus exilis hesperis*). Thirty-four acres will be developed as riparian habitat for southwestern willow flycatchers

(*Empidonax traillii extimus*), yellow-billed cuckoos (*Coccyzus americanus occidentalis*), and other LCR MSCP species as identified in the LCR MSCP Habitat Conservation Plan (LCR MSCP 2004).

2.2 Location

The IPCA is located within Reach 5, on the Imperial NWR north of Yuma, Arizona. It is within the historic flood plain of the lower Colorado River and adjacent to River Mile 59 on the Arizona side (figure 1).

2.3 Landownership

The property is located on the Imperial NWR, which is owned and managed by the USFWS.

2.4 Water

The IPCA receives water from the Imperial NWR's entitlement granted by the 1964 Supreme Court Decree in *Arizona* v. *California* and by U.S. Department of the Interior Secretarial Reservation. The Imperial NWR has an entitlement of 28,000 acre-feet of water diverted from the mainstream, or 23,000 acre-feet of consumptive use of mainstream water, whichever is less, with a priority date of February 14, 1941. The water used for the ponds and irrigation is supplied from a portion of this water.

2.5 Agreements

A Land Use Agreement was signed in 2006 by Reclamation and the USFWS to secure land and water for the IPCA for the remainder of the 50-year LCR MSCP. The agreement outlines the rights and responsibilities of each partner in the project's development and maintenance.

2.6 Public Use

The IPCA is in an area that was closed to the public by the USFWS prior to becoming a conservation area, and it remains closed to the public.

Figure 1.—Map of the IPCA.

2.7 Law Enforcement

Law enforcement activities are performed primarily by the USFWS's Law Enforcement Officer, under the LCR MSCP's site-specific Fire Management & Law Enforcement Strategy (LCR MSCP 2010). Additional local law enforcement assistance is available through the Arizona Game and Fish Department's Yuma Office, the Yuma County Sherrif's Office, and the Bureau of Land Management's Yuma Office.

2.8 Wildfire Management

The USFWS will provide an appropriate management response to all wildfires that occur within the IPCA. The full range of suppression strategies is available to managers provided that selected options do not compromise firefighter/public safety or cost effectiveness while protecting wildlife habitat (LCR MSCP 2010).

3.0 HABITAT DEVELOPMENT AND MANAGEMENT

3.1 Planting

No planting occurred at the IPCA during FY13. Future development of 34 acres of a cottonwood-willow field is planned for FY15. Currently, soil mapping and sampling of the field is being conducted to evaluate salt concentrations and nutrient levels.

3.2 Irrigation

Water is supplied by the South Channel (Martinez Lake inlet) by two separate pump systems. A 75-horsepower pump provides water to irrigate the majority of the intensive management area to include LCR MSCP Fields 1, 2, 3a, and 18. A 200-horsepower pump was used to provide water to the Imperial ponds. This pump has been disconnected to minimize potential vectors of non-native fish passage into the ponds after eggs and larvae were entrained through the screen (Normandeau Associates, Inc. 2010). In 2011, a pipeline was run from the 1,500-gallon-per-minute well pump to Pond 1. Irrigation was provided to Pond 1 daily. A water delivery schedule was created to provide sufficient water to keep water physico-chemistry parameters within the standards further described under the "Water Quality Monitoring" section. Ponds 2–6 were not irrigated. Field 18 was irrigated from October 1 through November 1, 2012, and from mid-February

to September 30, 2013, to maintain a staff gauge reading at or near 1 foot. The fields planned for the future riparian area were irrigated in an effort to leach salts from the soils.

3.3 Site Management

Invasive and non-native vegetation management was completed within and adjacent to the IPCA and within or adjacent to conveyance infrastructure supporting the conservation area.

Planning was conducted for infrastructure changes. A groundwater well is to be drilled and developed to provide additional groundwater to the ponds. A pump will be installed on the new well, and the new and existing wells will be connected to piping infrastructure to provide water to the ponds. Irrigation to the fields and marshes will be redesigned to utilize both pump platforms, providing redundancy and increased pumping capacity to the existing canal system.

Major infrastructure failures occurred in FY12 on the irrigation supply canal at the Imperial NWR. Temporary repairs were made to ensure continued water delivery to both LCR MSCP conservation areas and to refuge-managed fields; however, these failures indicated defects in the water conveyance system. These defects included improper soil compaction and construction of the irrigation canal. No additional repairs were needed in FY13. Installation for the new canal system is planned for the late fall of 2017. Installation will occur when water demands are low and temporary water outages will have the lowest impact on refuge operations, vegetation, and wildlife.

Operation and management of the IPCA primarily relates to the control, manipulation, and management of water to the backwaters, marsh, and riparian fields. This includes pumping water into the marsh or riparian fields and operating gates and other control infrastructure to manage delivery of water into the IPCA. Water management may be adjusted seasonally to accommodate evapotranspiration rates and wildlife habitat requirements.

No fertilizers were applied to the fields in FY13, and no crop rotation occurred in that fiscal year. The riparian fields, marsh, and the edges along the ponds were mowed.

4.0 MONITORING

4.1 Backwater Monitoring

Monitoring of native fishes was focused on Pond 1 in FY13; in May 2011, a water management study was initiated to evaluate long-term water quality differences between Pond 1 and Ponds 2–6. All native fishes were removed from Ponds 2–6

and relocated into Pond 1 for the study. Pond 1 is being regularly managed with surface water from a well, and Ponds 2–6 do not receive any surface water. The study is ongoing. Native fish monitoring in Pond 1 is detailed below and included remote passive integrated transponder (PIT) tag scanning and larval collections.

Water quality was evaluated in all six ponds by measuring water physico-chemical parameters, temperature, pH, dissolved oxygen (DO), and specific conductivity (SpCond). Phytoplankton and zooplankton were collected quarterly from all six ponds.

4.1.1 Native Fish Monitoring

Bonytail and razorback sucker populations were monitored monthly with remote PIT scanners. Population estimates were calculated using a modified Peterson estimator (Ricker 1975) and capture and recapture data from October 2012 through September 2013. Estimates for bonytail ranged from 15 to 59 and for razorback suckers from 49 to 120; estimates could not be generated when recaptures were < 3 (tables 1 and 2).

Larval fish sampling began in January 2013 and continued through March 2013 in Ponds 1, 2, 4, and 6. One larva was captured from Pond 1; no larvae were captured from Ponds 2, 4, or 6.

4.1.2 Water Quality Monitoring

Physico-chemical parameters, SpCond, pH, DO, and temperature have been identified as important parameters for bonytail and razorback suckers to complete their life cycles. The Imperial ponds currently operate within a set of physico-chemical standards agreed upon by the Imperial Ponds Fisheries Coordination Team as outlined in Kesner et al. 2008 (pH < 9.0, DO > 4.0 milligrams per liter, and temperature < 33.3 degrees Celsius). No standards were set for SpCond. The average, minimum, and maximum of the previously stated parameters from October 2012 through September 2013 are provided on figures 2–5.

A 2-year water management study was completed in May 2013. The study evaluated the water physico-chemical parameters during a period of no surface water additions to Ponds 2–6 and the addition of well water to Pond 1. A trend analysis found temperature to be increasing over time in all ponds. The pH also appeared to be increasing over time, with differences being observed among ponds. DO levels did not appear to be a cause for concern at this time. SpCond levels are increasing over time in all ponds.

Table 1.—Population estimates and lower and upper confidence intervals for bonytail

(Population estimates could not be provided for November 2012 or January/February 2013 because there was no or insufficient recapture data.)

Date	Estimate	Lower confidence interval	Upper confidence interval
2012			
October	28	8	50
November	–	–	–
December	15	6	38
2013			
January	–	–	–
February	–	–	–
March	31	14	78
April	59	42	83
May	56	43	76
June	57	44	77
July	56	43	75
August	54	41	74
September	55	39	80

Table 2.—Population estimates and lower and upper confidence intervals for razorback suckers

(Population estimates could not be provided for March because there was no or insufficient recapture data.)

Date	Estimate	Lower confidence interval	Upper confidence interval
2012			
October	120	49	300
November	86	39	216
December	49	38	64
2013			
January	148	91	255
February	80	56	118
March	–	–	–
April	110	85	141
May	103	81	131
June	106	86	132
July	140	115	169
August	137	114	164
September	137	106	176

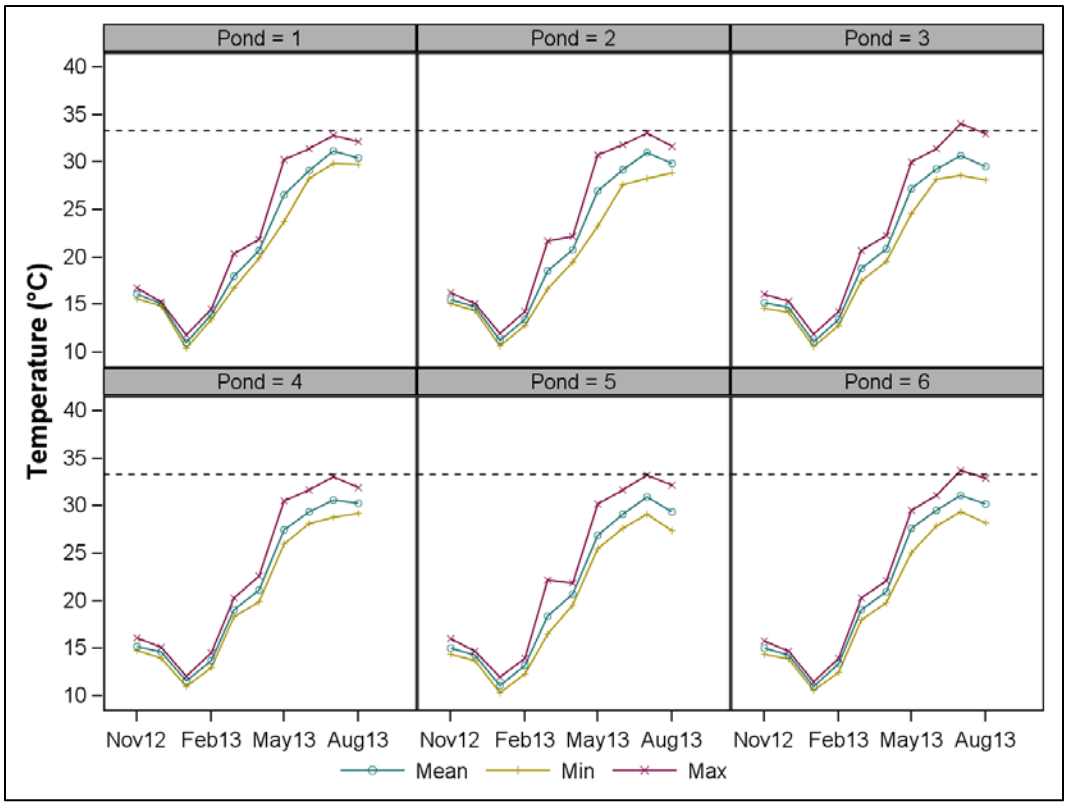

Figure 2.—Mean, minimum (Min), and maximum (Max) temperature.

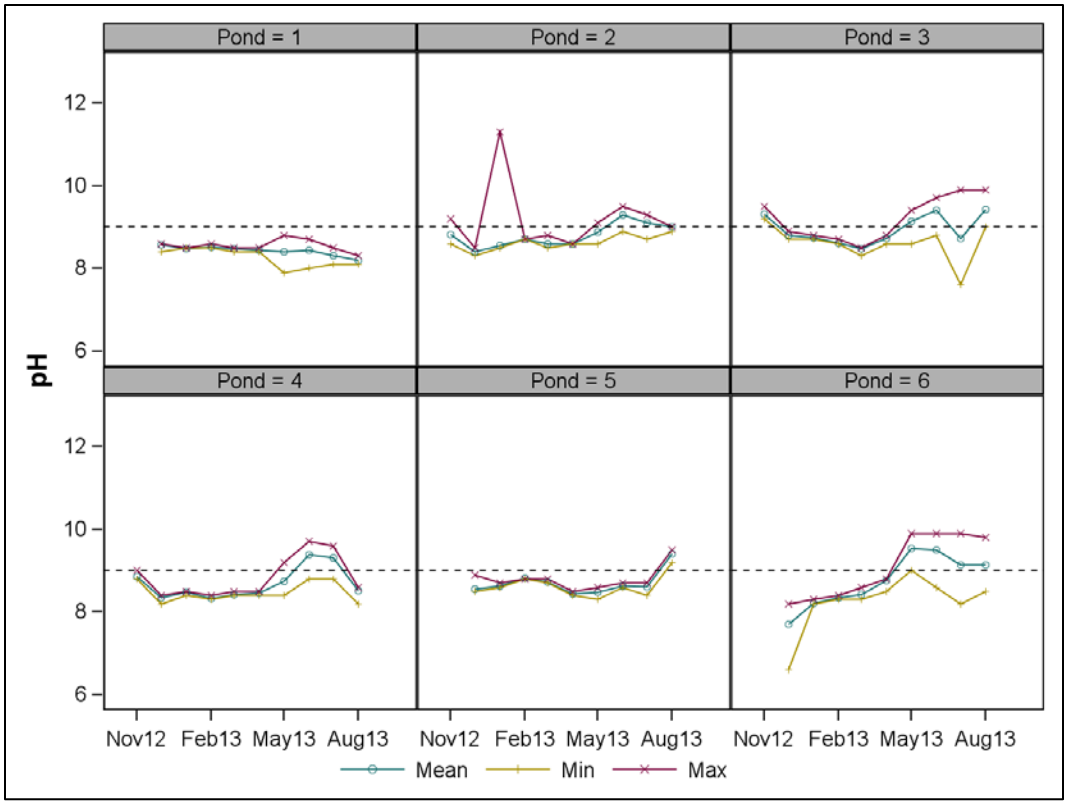

Figure 3.—Mean, minimum (Min), and maximum (Max) pH.

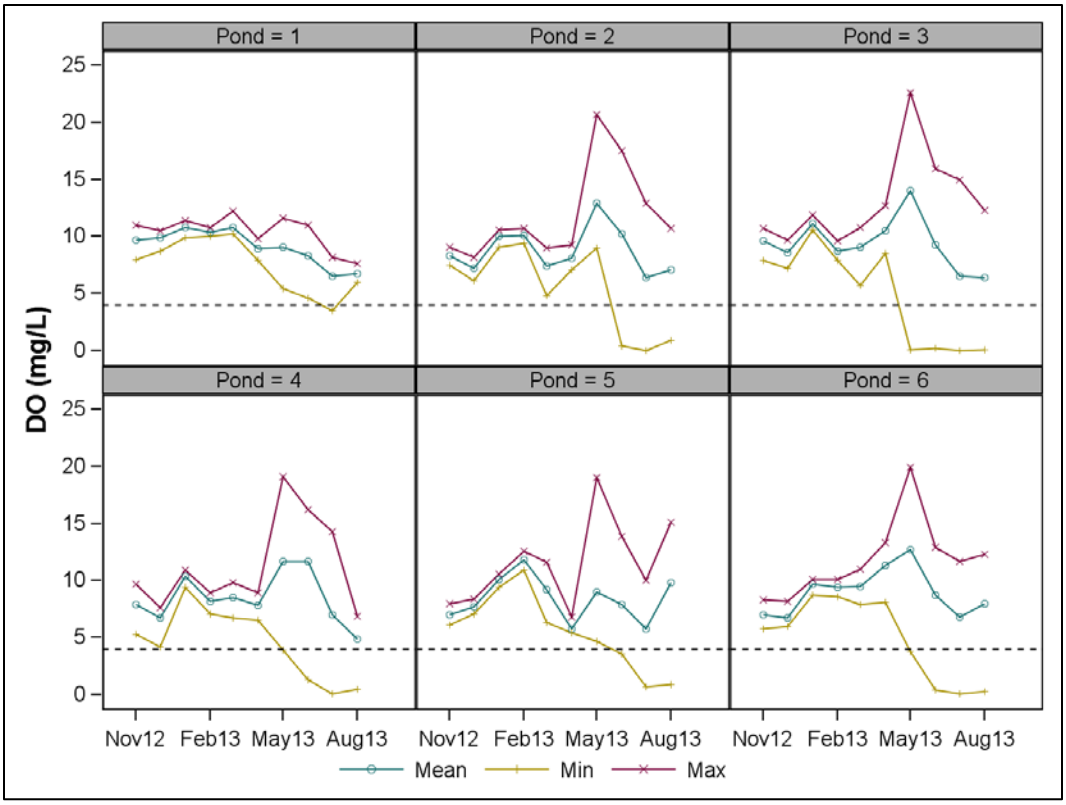

Figure 4.—Mean, minimum (Min), and maximum (Max) DO.

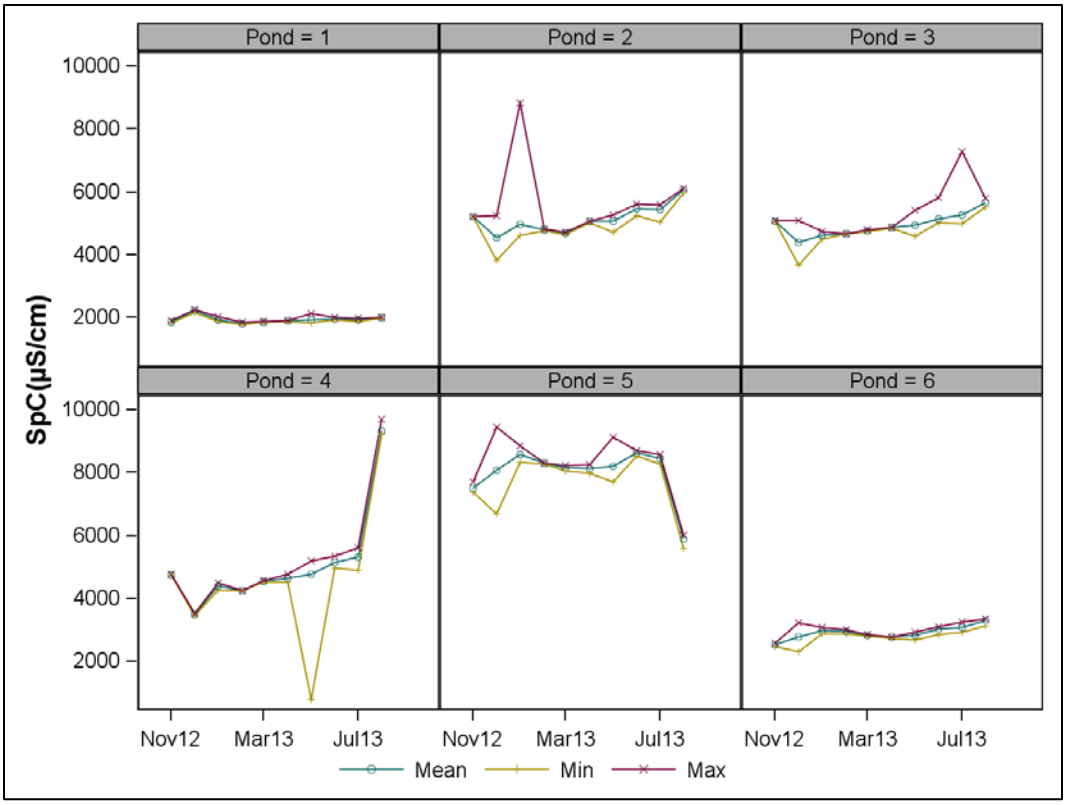

Figure 5.—Mean, minimum (Min), and maximum (Max) SpCond.

4.1.3 Phytoplankton and Zooplankton

Sampling for phytoplankton and zooplankton occurred quarterly (November 2012, January, April, and July 2013). Samples were collected at the deepest location in each pond (location determined from bathymetry maps) using standardized vertical tow sampling methods. The relative abundance and total biomass for both phytoplankton and zooplankton were comparable to other LCR MSCP monitored backwater habitats.

4.2 Avian Monitoring

Avian monitoring in FY13 included surveys for yellow-billed cuckoos and marsh birds. In FY13**,** changes were made to the terrestrial monitoring at the IPCA. No surveys were conducted in FY13 for southwestern willow flycatchers, as the area below Parker Dam on the lower Colorado River is now only surveyed once every 3 years. No breeding or resident southwestern willow flycatchers have been detected on the Imperial NWR. Surveys will be conducted in FY15. Pre-development monitoring for the other LCR MSCP covered birds was completed in prior years, so post-development avian monitoring will not be conducted again until the riparian areas are planted.

4.2.1 Yellow-billed Cuckoos

Four surveys for yellow-billed cuckoos were conducted in suitable habitat on the IPCA on June 26, July 8 and 19, and August 3, 2013. No yellow-billed cuckoos were detected during any of the surveys (McNeil and Tracy 2013).

4.2.2 Marsh Bird Surveys

Presence surveys for marsh bird species were conducted in the IPCA in March, April, and May 2013. Two points were surveyed in Field 18, and four points were surveyed in the Imperial ponds (figure 6). Call-playback surveys for the California black rail, western least bittern, Virginia rail (*Rallus limicola*), and Yuma clapper rail were performed by the USFWS using a standardized protocol from the National Marsh Bird Monitoring Program (Conway 2008). No marsh birds were detected at the Imperial ponds, but Yuma clapper rails and western least bitterns were detected at Field 18 (table 3) (Kahl 2015).

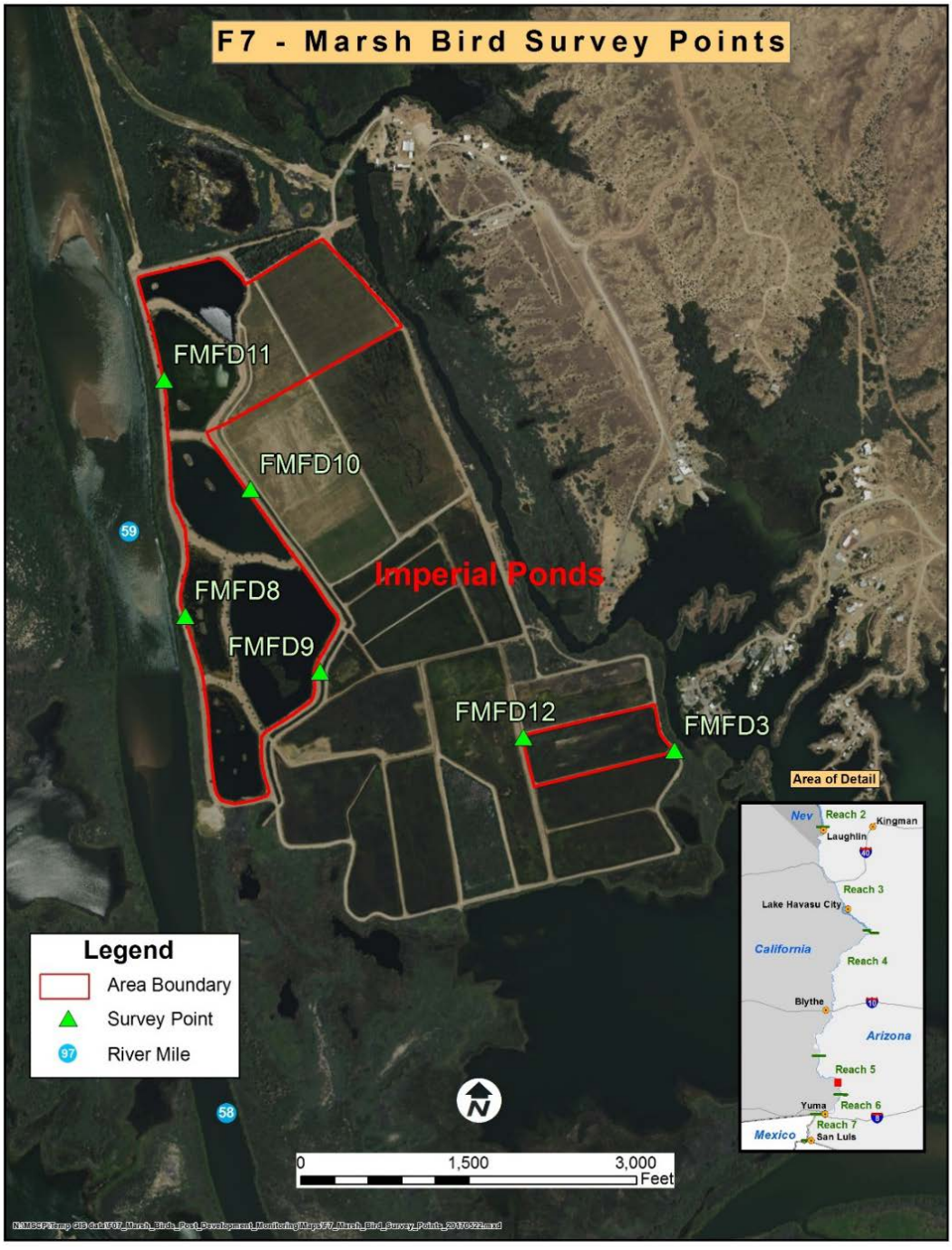

Figure 6.—Marsh bird survey points at the IPCA.

Table 3.—Marsh bird detections, per period (dates in parenthesis), at Field 18

Species	Survey period (date)			
	1 (3/20)	2 (4/4)	3 (4/16)	4 (5/14)
Western least bittern	0	0	0	2
Yuma clapper rail	0	2	1	0

5.0 HABITAT CREATION CONSERVATION MEASURE ACCOMPLISHMENT

5.1 Vegetation Monitoring

Vegetation monitoring is not conducted for marshes; rather, remote sensing and ArcGIS techniques, as described below, are used to assist in the evaluation of the IPCA.

5.2 Evaluation of the Imperial Ponds Conservation Area

The process for habitat creation conservation measure accomplishment was finalized in October 2011 (LCR MSCP 2011). All areas within the IPCA were designed to benefit covered species at the landscape level.

The fish ponds will continue to be maintained consistent with the protocols employed during the water management study until a water delivery and management plan is developed. The water depths at Field 18 are managed during the breeding season for Yuma clapper rails, California black rails, and western least bitterns. Table 4 shows how much habitat is creditable for each of the targeted covered species at the IPCA. Three species with habitat creation goals have creditable acres at the IPCA. These species (including their corresponding conservation measure acronym) are Yuma clapper rail (CLRA1), California black rail (BLRA1), and least bittern (LEBI1).

Table 4.—Species-specific habitat creation conservation measure creditable total acres for 2013

Species-specific habitat creation conservation measure	BONY2	RASU2	CLRA1	BLRA1	LEBI1
Creditable acres in 2013	0[1]	0[1]	0	0	0
Total, including previous years	**0**	**0**	**12**	**12**	**12**

[1] At this time, the Imperial ponds are not suitable for establishment and maintenance of healthy fishes. Reclamation has begun a 5-year study to determine the criterial management actions required to maintain healthy fishes at the ponds.

6.0 ADAPTIVE MANAGEMENT

Adaptive management relies on the initial receipt of new information, the analysis of that information, and the incorporation of the new information into the design and/or direction of future project work (LCR MSCP 2007). Under the Adaptive Management Program, conservation areas will be assessed for biological effectiveness and whether they fulfill the conservation measures outlined in the Habitat Conservation Plan for 26 covered species and if they potentially benefit 5 evaluation species. Post-development monitoring and species research results will be used to adaptively manage conservation areas after initial implementation. Once monitoring data are collected over a few years, and then analyzed for the IPCA, recommendations may be made through the adaptive management process for site improvements in the future. Currently, there are no adaptive management recommendations for the IPCA.

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